



CRS Report for Congress

Homeland Security and Combating Terrorism Research and Development: Funding, Organization, and Oversight

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Summary

After the 2001 terrorist attacks, planning and coordination mechanisms for research and development (R&D) to combat terrorism were developed in the White House's Office of Homeland Security, Office of Science and Technology Policy (OSTP), and in separate agencies. Subsequently, P.L. 107-296, the Homeland Security Act, consolidated some R&D in the Department of Homeland Security (DHS), whose FY2005 R&D budget request is \$1.2 billion, 15.5% more than FY2004. DHS has responsibility to coordinate federal agency homeland security R&D, which was requested at \$3.6 billion. Policy issues include priority-setting within DHS and other agencies, performance monitoring, and interagency coordination. This report will be updated.

Funding for Federal Combating Terrorism R&D. Estimates of federal R&D funding related to combating terrorism differ and sometimes conflict. According to the latest data available from the Office of Management and Budget (OMB), federal agency R&D funding to combat terrorism was requested at \$3.2 billion for FY2004, about 6 times the FY2000 amount. See **Table 1**. OMB considers federal agency homeland security funding to be the domestic subset of combating terrorism R&D.¹ OMB does not publish data on homeland security R&D funding. Non-published data provided by OMB and background materials prepared by OSTP put federal homeland security R&D funding at \$3.6 billion requested for FY2005.² DHS will manage about one-third of this budget.³

¹ OMB, *2003 Report to Congress on Combating Terrorism*, Sept. 2003, p. 1.

² OSTP, *Homeland Security Research and Development Funding in the President's FY2005 Budget*, [<http://www.ostp.gov/html/budget/2005/FY05HS1-pager.pdf>].

³ For additional information, see CRS Report RL31914, *Research and Development in the Department of Homeland Security*, and CRS Report RS21542, *Department of Homeland Security: Issues Concerning the Establishment of Federally Funded Research and Development Centers (FFRDCs)*. See also CRS Report RL31576, *Federal Research and Development Organization, Policy, and Funding for Counterterrorism* and CRS Report RL31354, *Possible Impacts of Major Counterterrorism Security Actions on Research, Development, and Education*.



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See **Table 2** and **Table 3**. (Even though a subset, funding for homeland security R&D is larger than the amount for FY2004 combating terrorism R&D, probably because the latter figure is for FY2004, the homeland security figure is for FY2005, and because, as illustrated by the different agency figures in the tables, federal agencies appear to use different data for the same year in different reports.)

Table 1. Research and Development (R&D) to Combat Terrorism, By Agency, FY2000-FY2004 (Request), Dollars in Millions

Agency	FY2000 Actual	FY2001 Actual	FY2002 Enacted	FY2002 Supplemental	FY2003 Enacted	FY2003 Supplemental	FY2004 Request
Agriculture	\$37.3	\$51.7	\$28.0	\$52.2	\$30.4	—	\$42.1
Commerce	9.6	0	11.7	7.0	16.4	—	19.4
Corps of Engineers - Civil Works	unknown	unknown	—	3.0	—	—	—
Defense	unknown	unknown	259.0	2.0	597.0	—	157.0
Energy	59.7	66.2	[64.9]	—	19.0	—	[43.7] (OMB FY2003 rept. p. 57)
EPA	unknown	0	2.8	1.5	49.7	—	29.0
DHHS	109.7	102.8	117.2	85.0	831.2 [requested FY2003 data=1,770.9 (NIH,\$1.75B; CDC, \$40M; FDA, \$50M)]	—	1,648.2
National Security	190.0	298.9	—	—	—	—	—
Homeland Security	—	—	110.0	93.4	658.2	—	844.0
Justice	45.2	11.4	13.1	76.1	173.5	4.9	174.7
NSF	unknown	7.0	228.8	0	268.5	—	285.7
Postal Service	unknown	unknown	—	9.5	—	—	—
State	7	unknown	1.8	—	1.8	—	1.8
Transportation	50.7	50.2	54.7	54.0	3.7	—	3.9
Treasury	2.1	1.2	1.1	0	1.1	—	unknown
Total	\$511.3	\$589.4	\$827.0	\$383.6	\$2,649.4	\$4.9	\$3,205.7

Source: OMB, *Annual Report to Congress on Combating Terrorism*, Aug. 2001, p. 27 for FY2000; OMB, *Annual Report to Congress on Combating Terrorism*, June 24, 2002, p. 26, for column FY2001, DOE FY2002, DHHS details for FY2003 requested (p. 59), and Treasury. Remainder, especially the last four columns, from: OMB, *Report to Congress on Combating Terrorism*, Sept. 2003, p. 16. Columns may not add due to rounding. Data in [] are not additive and for comparison purposes.

OMB's annual reports to Congress on *Combating Terrorism* have described federal agency R&D activities. The *Department of Health and Human Services (DHHS)*, with over 50% of the total, manages most of the federal civilian effort against bioterrorism. *DHS* R&D, at one-third of the total, focuses largely on technology-oriented projects funded by the Science and Technology (S&T) Directorate. The third largest supporter of such R&D is the *National Science Foundation (NSF)*, for basic research, followed by the *Department of Justice* and the *Department of Defense, (DOD)*, including the Defense Advanced Research Projects Agency (DARPA). The *Technical Support Working Group (TSWG)*, a State Department/DOD group, coordinates interagency R&D on new technologies to combat terrorism (funding requested at about \$43 million, with an operating budget of about \$141 million). The *Department of Agriculture's (USDA)* R&D focuses on plant and animal diseases. The *Environmental Protection Agency (EPA)*

focuses on toxic materials research. In the *Commerce Department*, R&D at the National Institute of Standards and Technology (NIST) deals with protecting information systems. In the past, the *Department of Energy's* (DOE) counterterrorism R&D included work on security, materials, detection of toxic agents, genomic sequencing, DNA-based diagnostics, and microfabrication technologies. See also CRS Report RS21617, *Homeland Security: Extramural R&D Funding Opportunities in Federal Agencies*.

Table 2. Non-published OMB Data on Homeland Security R&D Funding by Agency, Budget Authority, Dollars in Millions

Agency	2003 Enacted	2003 Supplemental	2004 Enacted	2005 Request
Agriculture	\$11.8	—	\$21.8	\$50.0
Commerce	16.4	—	16.5	22.6
Defense	212.0	—	267.0	340.2
Energy	18.9	—	19.5	8.0
Health/Human Services	834.2	—	1,643.8	1,557.2
Homeland Security	619.2	—	959.2	1,111.4
Justice	160.5	25.2	179.5	194.5
Transportation	3.7	—	—	4.1
EPA	52.9	—	28.8	22.8
NSF	268.5	—	305.6	315.8
Total Homeland Security R&D	2,198.2	25.2	3,441.7	3,626.6
Total Non-defense Homeland Security R&D	\$1,986.2	\$25.2	\$3,174.7	\$3,286.4

Source: Information Provided by OMB, Jan. 27, 2004. OMB characterized these data as “discretionary budgetary resources,” which, according to OMB staff is “budget authority,” the term used in the table. Data exclude facilities and construction.

Creation of a Department of Homeland Security and Other Laws. The Homeland Security Act of 2002, P.L. 107-296, November 25, 2002, created the DHS, and, as one of its four directorates, a Directorate on S&T. Most of DHS’s research, development, test, and evaluation (RDT&E) is under jurisdiction of the Under Secretary for Science and Technology, created by Title III. Dr. Charles McQueary, a retired president of General Dynamics Advanced Technology Systems, was confirmed to this position. His responsibilities are to: coordinate DHS’s S&T missions; in consultation with other agencies, develop a strategic plan for federal civilian countermeasures to threats, including research; except for human health-related R&D, conduct and/or coordinate DHS’s intramural and extramural R&D and coordinate with other federal agencies to carry out DHS R&D; set national R&D priorities to prevent importation of chemical, biological, radiological, nuclear and related weapons and terrorist attacks; collaborate with DOE regarding using national laboratories; collaborate with the Secretaries of USDA and DHHS to identify biological “select agents”; develop guidelines to disseminate DHS’s research and transfer technology; and support U.S. S&T leadership. If possible, DHS’s research is to be unclassified. The law authorized a Homeland Security Science and Technology Advisory Committee to advise and recommend research priorities. Members include representatives of emergency first-responders, experts in research, engineering, business, and management.⁴ The 20-member committee was created in February 2004.

⁴ “Department of Homeland Security Announces Science and Technology Advisory Committee Members,” DHS Press Release, Feb. 26, 2004.

Title III transferred to DHS DOE programs in chemical and biological security R&D; nuclear smuggling and proliferation detection; nuclear assessment and materials protection; biological and environmental research related to microbial pathogens; the Environmental Measurements Laboratory; and the advanced scientific computing research program from Lawrence Livermore National Laboratory. DHS was mandated to incorporate a newly created National Bio-Weapons Defense Analysis Center and USDA's Plum Island Animal Disease Center, but USDA may continue to conduct R&D at the facility. Coast Guard and Transportation Security Administration (TSA) R&D are now located within DHS. DHS's Secretary is to collaborate with the DHHS Secretary to set priorities for DHHS's human health-related R&D on "countermeasures for chemical, biological, radiological, and nuclear and other emerging terrorist threats."

Pursuant to Title III, the Under Secretary may establish or contract with one or more Federally Funded R&D Centers (FFRDC) for independent analysis of homeland security issues. The Homeland Security Advanced Research Projects Agency (HSARPA) supports applications-oriented innovative homeland security RDT&E in industry, FFRDCs, and universities. Extramural funding is to be competitive and merit-reviewed, but distributed to as many U.S. areas as practicable. One or more university-based centers for homeland security is to be established; the first center, on Risk and Economic Analysis of Terrorism Events at the University of Southern California, was announced in Nov. 2003. DHS plans to establish two more centers by April 2004, one on combating animal-related agro-terrorism, and the other on food security. DHS also supports a university fellowship/training program. Regarding intramural R&D, the DHS may use any federal laboratory and may establish a headquarters laboratory to "network" federal laboratories. A Homeland Security Institute (HSI) is authorized to conduct risk analysis and policy research on vulnerabilities of, and security for, critical infrastructures; improve interoperability of tools for field operators and first responders; and test prototype technologies. Reportedly, DHS plans to select the HSI contractor by May 2004. A Technology Clearinghouse was authorized to transfer information about innovative solutions for homeland security and will coordinate with TSWG, which reviews R&D proposals responsive to DHS solicitations. DHS issued standards for personal protective gear and radiological and nuclear detectors in Feb. 2004.

Among the functions of the Special Assistant to the Secretary, created by Sec. 102 of P.L. 107-296, is working with the private sector to develop innovative technologies for homeland security. DHS issued a rule and procedures to handle critical infrastructure information that is voluntarily submitted to the government in good faith that will not be subject to disclosure under the Freedom of Information Act (*Federal Register*, Feb. 20, 2004, pp. 8073-8089). P.L. 107-296 gave the DHS Secretary special acquisitions authority for basic, applied, and advanced R&D (Sec. 833). Sec. 1003 authorized NIST to conduct R&D on improving information security. The OSTP Director's responsibilities include studying procedural changes in the issuance of student visas (Sec. 428) and advising the President on homeland security (Sec. 1712). P.L. 107-305, "The Cyber Security Research and Development Act," authorized \$903 million over five years for R&D and training programs by NSF and NIST to prevent and combat terrorist attacks on private and government computers.

In its FY2005 budget justification, DHS requested \$1.2 billion for R&D, with \$987 million for the S&T directorate, about 14% more than for FY2004. See **Table 3**. About \$431 million, or 40%, of DHS's R&D funding would be for basic and applied research,

up from 11% for FY2004. The rest would go largely for development, and a small amount for facilities.

Table 3. Department of Homeland Security R&D Budget
(budget authority in millions of dollars)

Directorate (Dir.) or Program	FY 2003 actual	FY2004 estimate	FY2005 request
Border & Transportation Security (BTS) Dir, includes TSA	\$163	\$170	\$229
Emergency Preparedness and Response (EPR) Dir.	0	0	0
Information Analysis and Infra. Dir.	0	0	0
Science and Technology Dir., includes:	554	869	987
<i>R&D Consolidation (\$ from other DHS agencies)</i>	0	0	24
<i>Biological countermeasures, including Nat'l Biodef. Anly&Countermeasures Cntr (NBACC)</i>	363	285 [88]	407 [35]
<i>Nuclear & Radiological countermeasures</i>	75	126	129
<i>Chemical ctrmeasures</i>		52	53
<i>High Explosives ctrmeasures</i>	7	10	10
<i>Threat & vulnerability assessment (TVTA) (Critical Infrastructure Protection) (Cybersecurity)</i>	36 — —	100 — —	102 [6] [18]
<i>Conventional missions/Support to DHS Components (BTS, EPR, USGS, Secret Service, Immigration)</i>	—	34	34
<i>Rapid Prototyping /TSWG</i>	33	73	76
<i>Standards /state and local</i>	20	39	40
<i>Counter MANPADS (anti- aircraft missiles)</i>	0	60	61
<i>Emerging threats</i>	17	21	21
<i>University programs /HS fellowships</i>	3	69	30
<i>Salaries and Expenses for S&T</i>	—	44	[53]
Total S&T Directorate R&D with Salaries and Expenses	[554]	[913]	[1,039]
Coast Guard (counted in S&T Dir. with FY2005 request)	21	14	[14]
Total DHS R&D	\$737	\$1,053	\$1,216

Sources and notes: The symbol — means is not given separately. Items in [] are shown for comparison and are not additive. Since comparable trend data were not in the DHS FY2005 justification, FY2003 and FY2004 data are from American Association for the Advancement of Sciences (AAAS), "DHS R&D Wins Big Increase in FY2005 Budget," Mar. 2, 2004. FY2005 data are from primarily DHS, *Science and Technology*, FY2005 Congressional Budget Justification. The term "estimate," that AAAS uses is the agency estimate of appropriations and allocations that will be used. AAAS figures are based on OMB R&D data and supplemental agency budget data. Data are rounded to the nearest million, and may not total.

Coordination Mechanisms Created Before Authorization of DHS. OSTP is a statutory office in the Executive Office of the President; its Director advises the President and recommends federal R&D budgets. OSTP's Director has chaired the National Security Council's Preparedness Against Weapons of Mass Destruction R&D Subgroup (comprised of 16 agencies), which helps plan R&D relating to chemical, biological, nuclear, and radiological threats. OSTP provides technical support to DHS and manages the interagency National Science and Technology Council (NSTC), which created a Committee on Homeland and National Security to set help set R&D priorities in eight functional areas. OSTP's interagency work has focused on such topics as anthrax, regulations to restrict access to research using biological "select agents," access to "sensitive but unclassified" scientific information, policy for foreign student visas, access to "sensitive" courses, and advanced technology for border control. Pursuant to Executive Order 13231, OSTP worked with the interagency President's Critical

Infrastructure Board to recommend priorities and budgets for information security R&D. The Homeland Security Council (HSC), created by P.L. 107-296, provides policy and interagency guidance. It is unclear if the HSC Policy Coordination Committee on R&D, created pursuant to Executive Order 13228, still functions. The working group on bioterrorism prevention, preparedness, and response, established by Sec. 108 of P.L. 107-188, the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, consists of the DHHS and DOD Secretaries and other agency heads.

Oversight Issues. In addition to monitoring DHS's R&D activities, other homeland security R&D oversight issues include the following. (1) Dr. McQueary's testimony before the House Select Committee on Homeland Security, Feb. 25, 2004, identified performance goals and metrics for many of the S&T Directorate's programs and portfolios. Accomplishment of targets could be monitored. (2) Regarding priority-setting, some observers question whether DHS makes adequate use of non-governmental experts to identify program priorities, including for internal R&D, HSARPA, the university center(s), and laboratories. The external 20-member Homeland Security Science and Technology Advisory Committee, authorized to advise and recommend research, had its first meeting in Feb. 2004. Monitoring of the committee's activities might be undertaken. Also, it has been estimated that FY2003 congressional "earmarks" for homeland security academic R&D totaled \$223 million, a 68% increase over 2002. The impacts of directed R&D spending on DHS's R&D priorities and their outcomes may be of interest.⁵ (3) Coordination of federal homeland security R&D may be an issue. Dr. McQueary testified that, by the fall of 2004, all U.S. government R&D "relevant to fulfilling the Department's mission will have been identified and co-ordinated as appropriate." DHS has responsibility for about one-third of the homeland security R&D budget and some authority to set priorities for other federal homeland security R&D, including in human health. Effectiveness in coordinating this R&D remains to be demonstrated and may depend upon interactions between DHS and existing counterterrorism coordination mechanisms in OSTP, NSTC, and interagency committees. Congress may monitor this activity. (4) Executive Order 13311 transferred to DHS the President's responsibilities to define and design procedures to protect sensitive unclassified homeland security information (Sec. 892 of P.L. 107-296). DHS is developing guidance on this complex subject; its work may raise controversy. See CRS Report RL31845, *Sensitive But Unclassified and Other Federal Security Controls on Scientific and Technical Information*.

Legislation. Legislation has been considered in the 108th Congress relating to homeland security science and technology issues. In response to criticism of P.L. 107-296, legislation was enacted (P.L. 108-7) to revise eligibility criteria so that more institutions can compete for funding for DHS's academic-based homeland security center(s). S. 589, the "Homeland Security Federal Workforce Act," with applicability to several federal agencies, was passed in the Senate and is being considered in the House. It authorizes additional homeland security-related national security fellowships and loan repayments for students in science and technology, but would exclude support for study of the social sciences.

⁵ J. Brainard and A.M. Barrego, "Academic Pork Barrel Tops \$2 Billion for the First Time," *Chronicle of Higher Education*, Sept. 16, 2003, p. A-18.